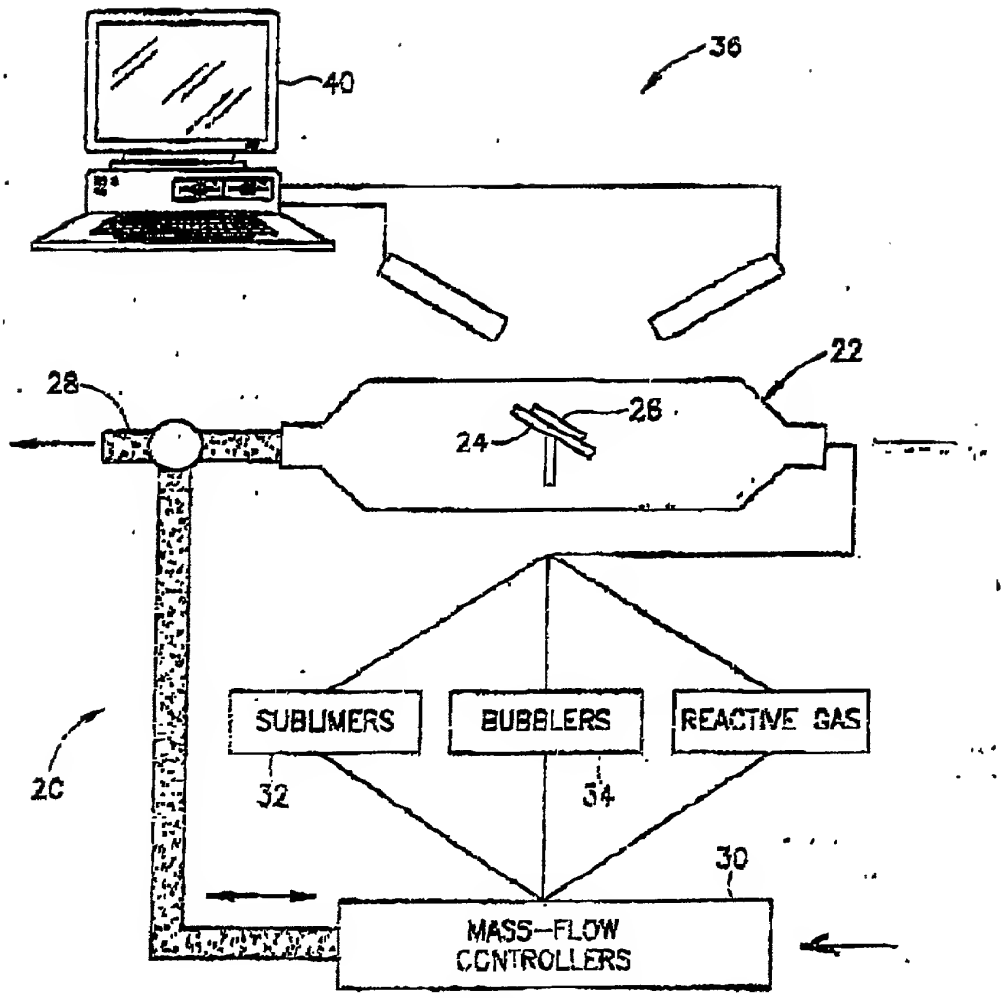


FIG.1

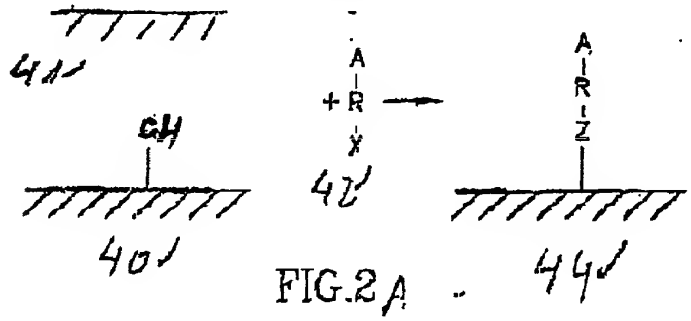


FIG.2A

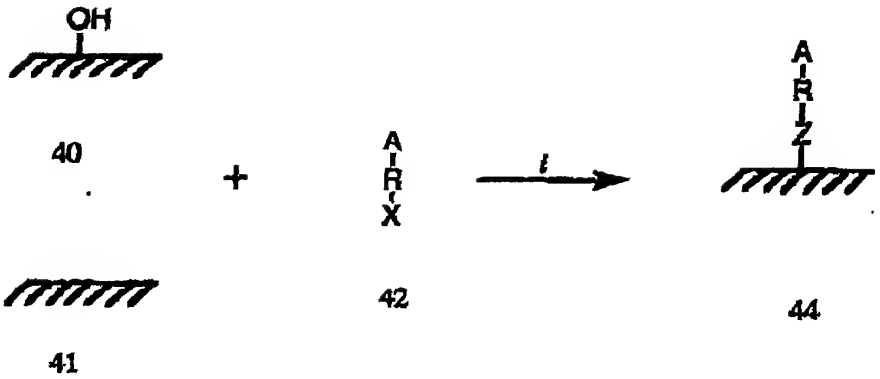


FIG.2A

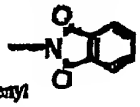
Substrate	Coupling Agent (X = silane or thiol)	Template Layer (Z = siloxane or metal-sulfide)
OH MO_x M = Si, Ti, In, Fe, ... 40	A R SiY_3 42 A = $-NH_2$ or  R = alkyl or phenyl Y = halogen or alkoxy	H_2N $(CH_2)_{n=2-6}$ Si O O NH_2 Si n=1-4 O O 44
M or MM' M = Au, Pt, Cu, ... MM' = GaAs, CdSe, ... 41	NH_2 R SH or NH_2 NH_2 R R S—S R = alkyl or phenyl 42	NH_2 $(CH_2)_{n=2-6}$ S NH_2 n=1-4 S 44

FIG.2B

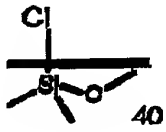
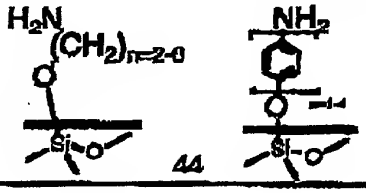
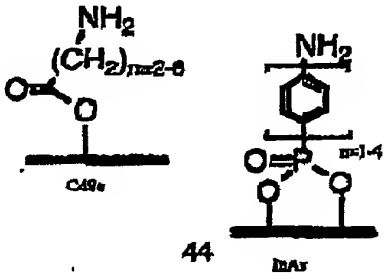
Substrate	Coupling Agent (X = OH, CO_2H, PO_3H_2)	Template Layer (Z = alkoxysilane, phosphate, or carboxylate)
 40	$HO\text{-}R\text{-}NH_2$ R = alkyl or phenyl 42	 44
II-IV / III-V 41	$HOOC\text{-}R\text{-}NH_2$ $(HO)_2OP\text{-}R\text{-}NH_2$ R = alkyl or phenyl 42	 44

FIG.2B cont'd

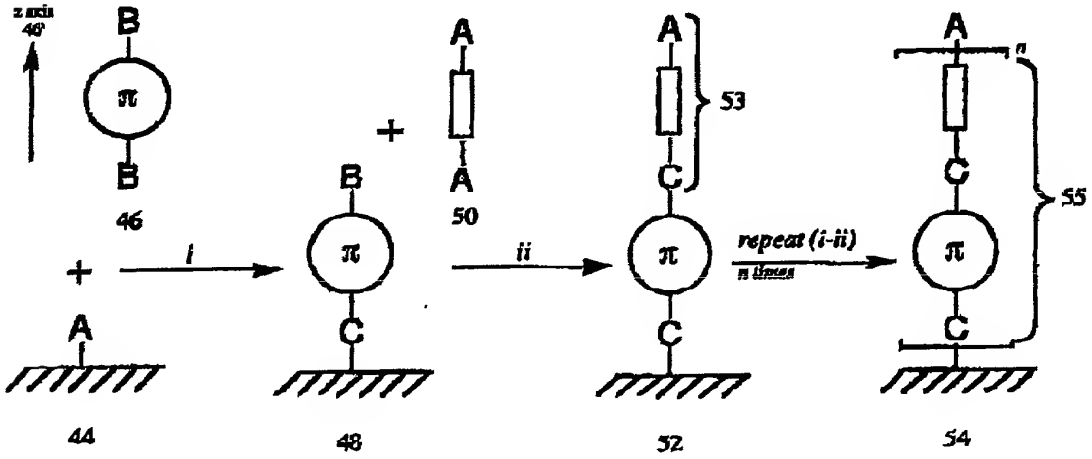


FIG.3A

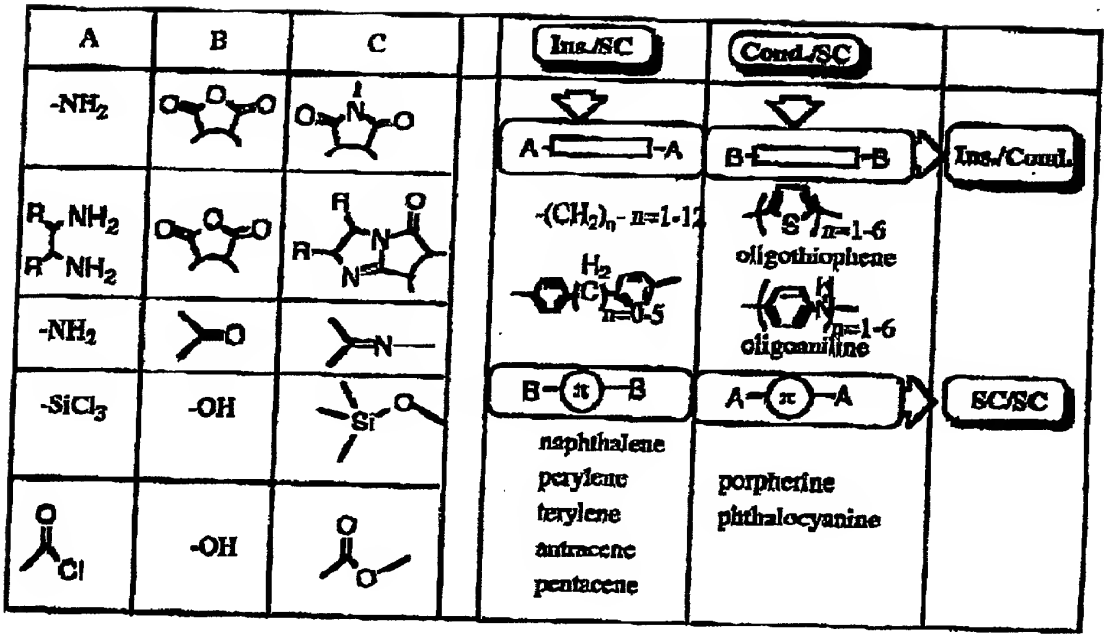

A
B
C
Ins./SC
Cond./SC
-NH2
A-A
B-B
Ins./Cond.
-(CH2)n- n=1-12
n=1-6
oligothiophene
n=0-5
n=1-6
oligoaniline
-NH2
-SiCl3
-OH
B-π-B
A-π-A
SC/SC
naphthalene
perylene
terylene
anthracene
pentacene
porphyrine
phthalocyanine
-OH

FIG.3B

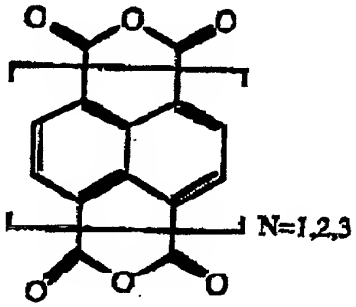

N=1,2,3

FIG.4A

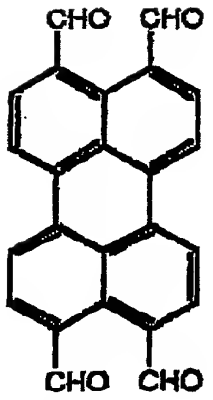


FIG.4B

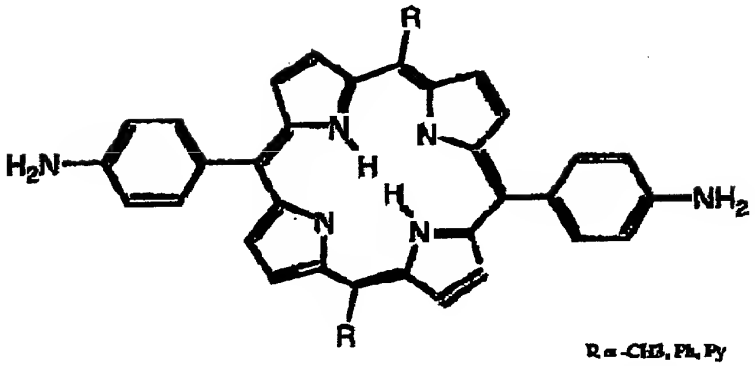


FIG.4C

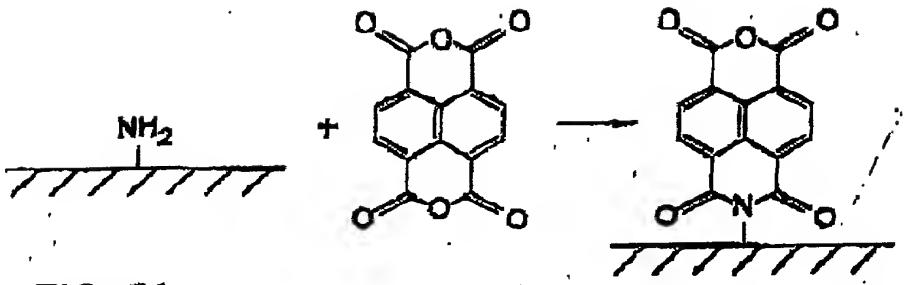


FIG. 5A

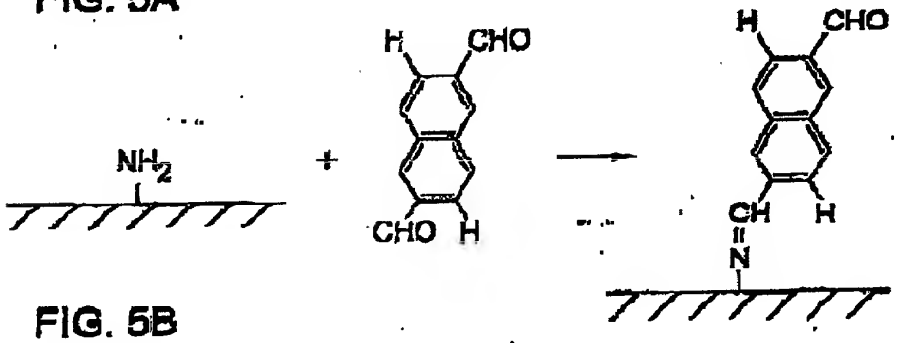


FIG. 5B

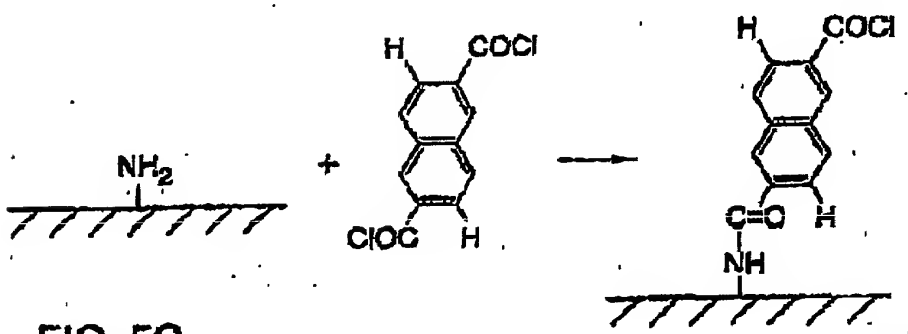


FIG. 5C

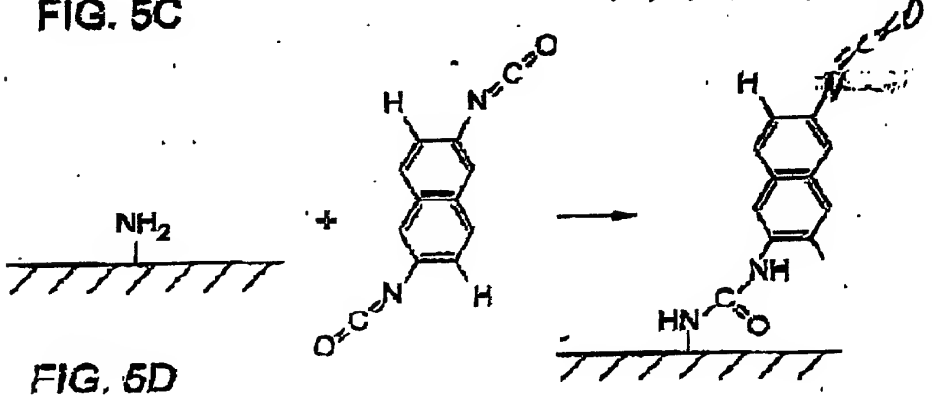


FIG. 5D

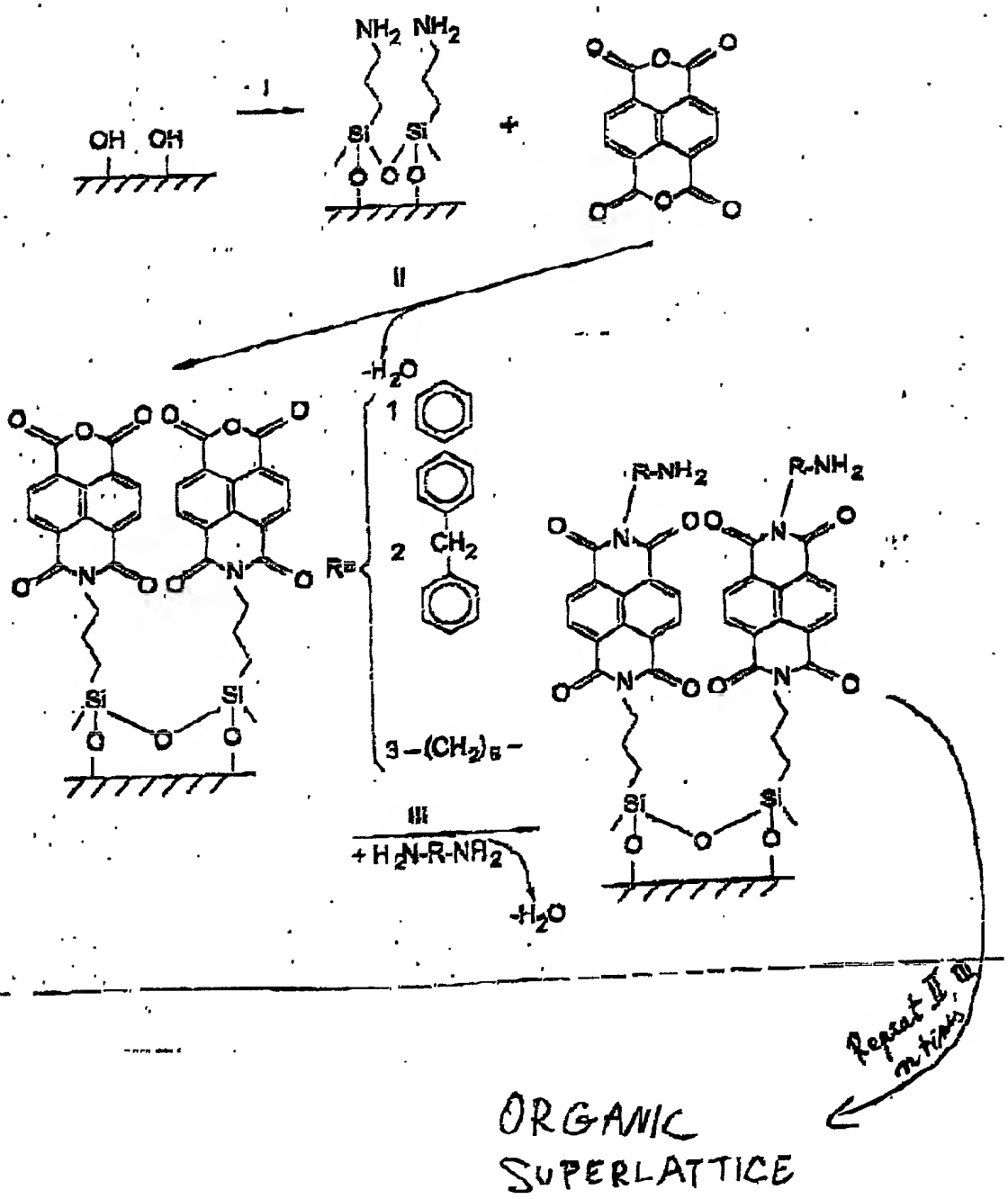


Fig. 6

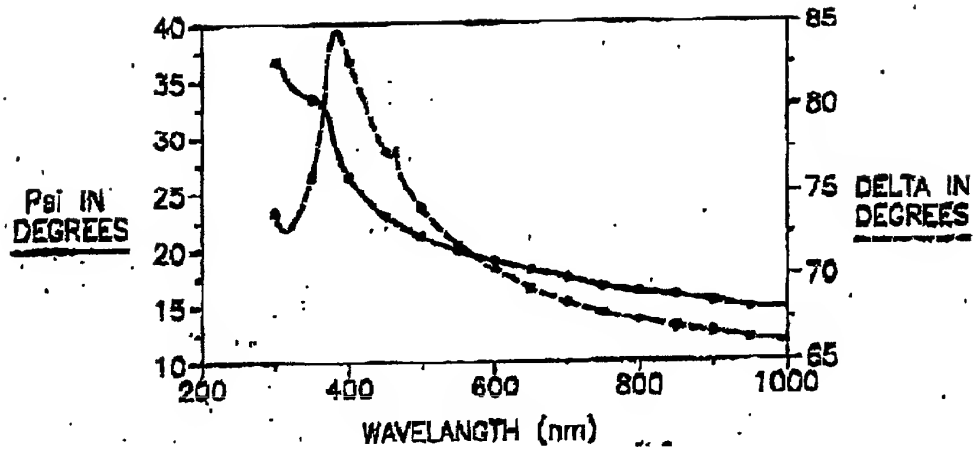

Psi IN DEGREES
DELTA IN DEGREES
WAVELANGTH (nm)
40
35
30
25
20
15
10
85
80
75
70
65
200
400
600
800
1000

FIG.7

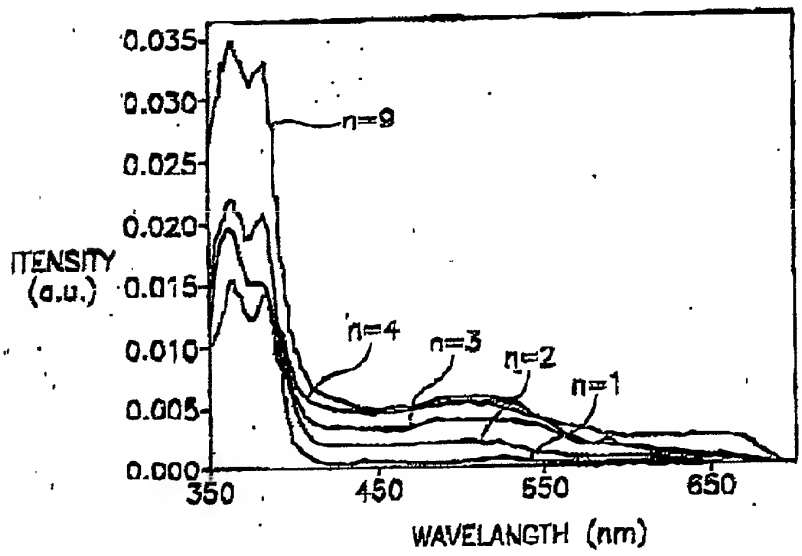
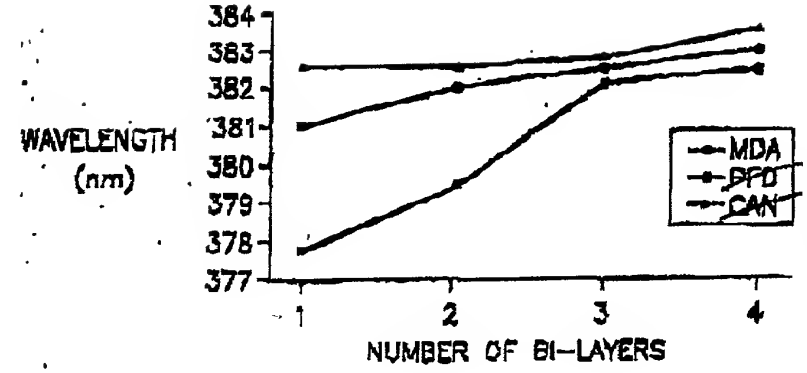

ITENSITY (a.u.)
WAVELANGTH (nm)
n=9
n=4
n=3
n=2
n=1
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
350
450
550
650

FIG.8



DAH
DAB

FIG.9

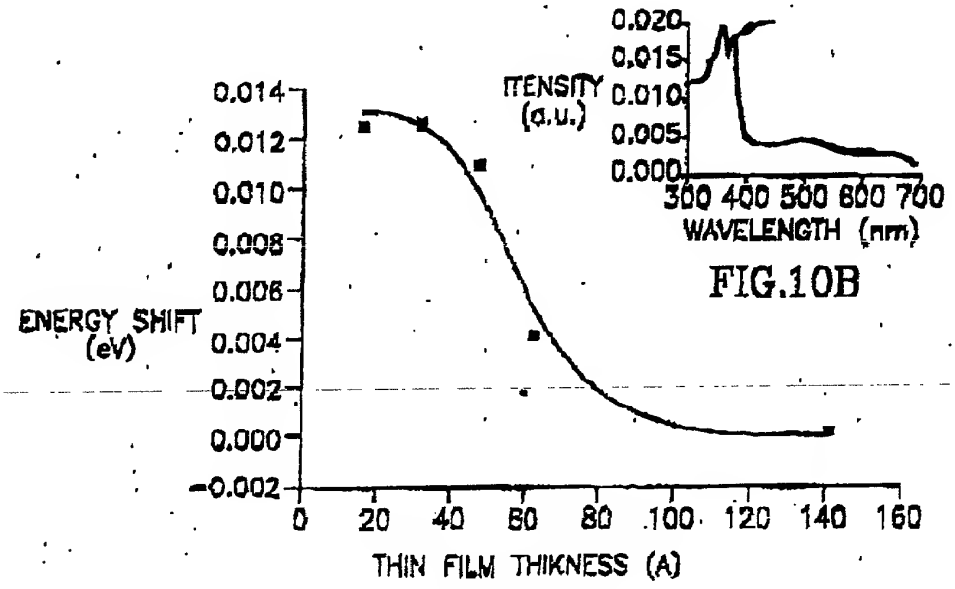


FIG.10B

FIG.10A

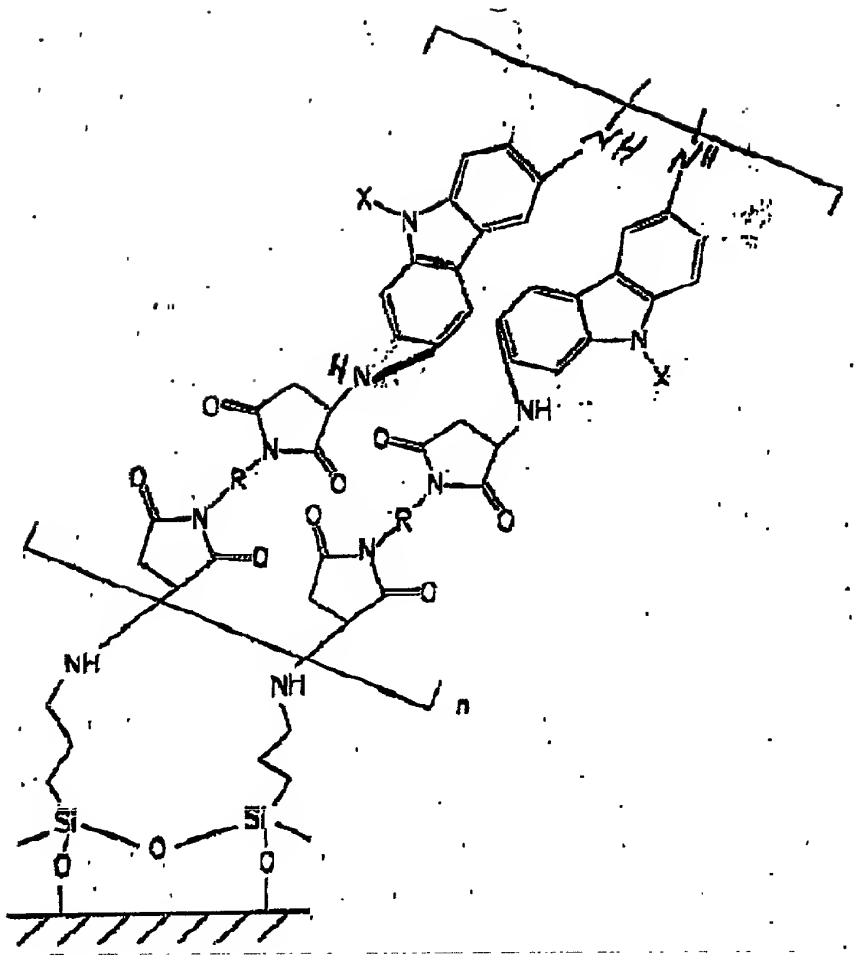


FIG.1

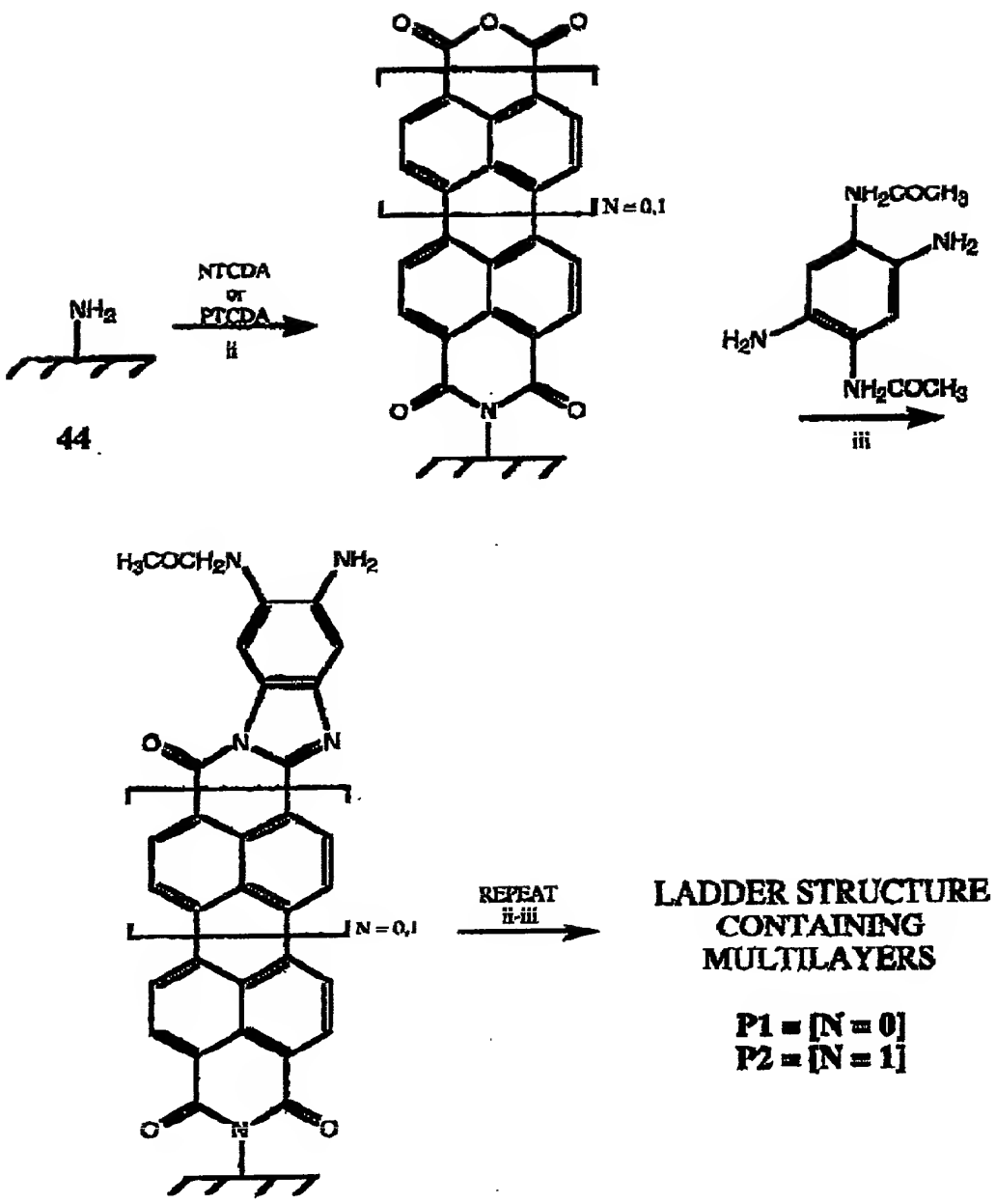

NH2
44
NTCDA
or
PTCDA
ii
N = 0,1
NH2COCH3
NH2
H2N
NH2COCH3
iii
H3COCH2N
NH2
N = 0,1
REPEAT
ii-iii
LADDER STRUCTURE
CONTAINING
MULTILAYERS
P1 = [N = 0]
P2 = [N = 1]

FIG.12A

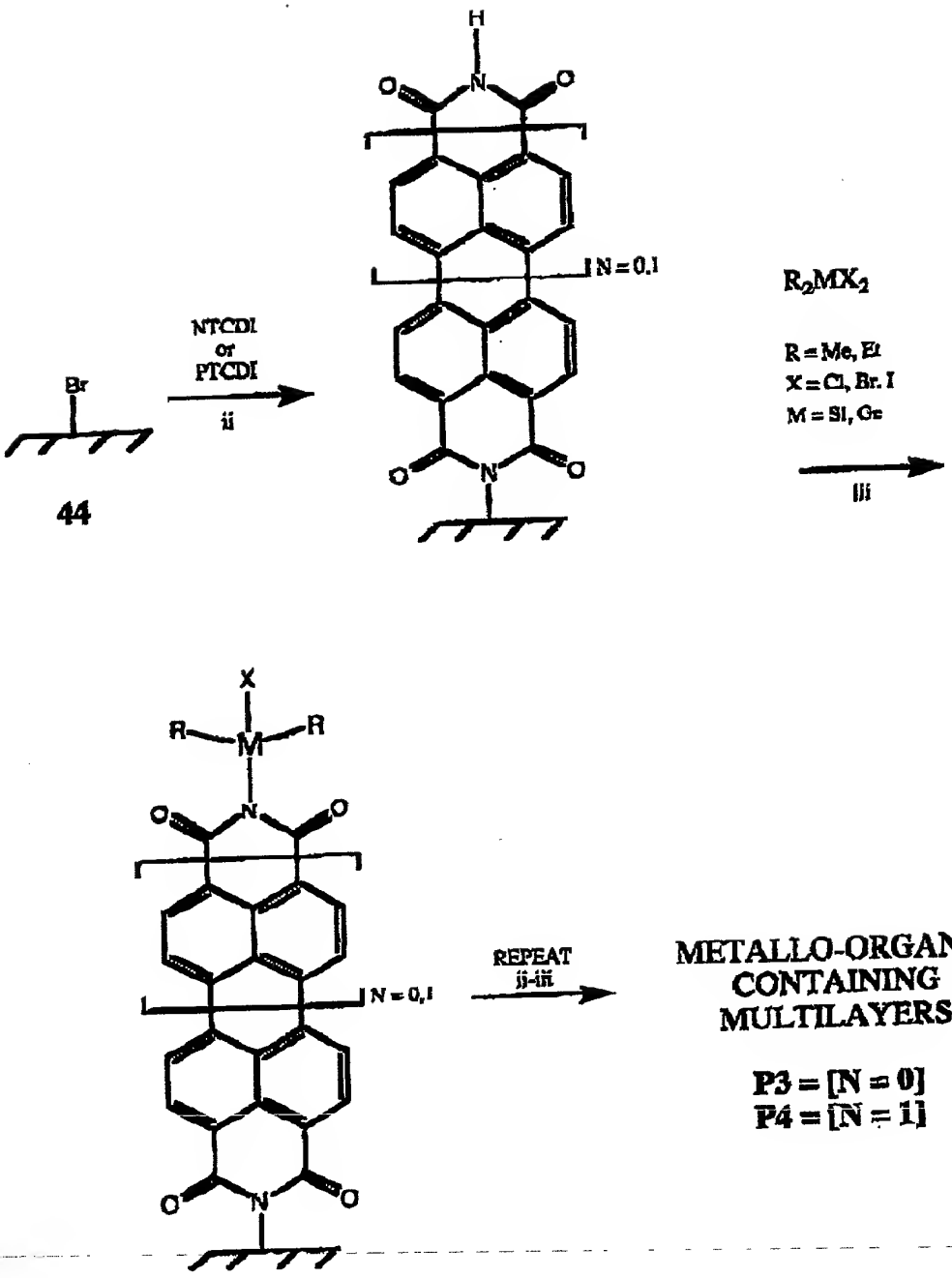

Br
44
NTCDI
or
PTCDI
ii
H
N
O
N = 0,1
R_2MX_2
R = Me, Et
X = Cl, Br, I
M = Si, Ge
iii
X
R
M
R
REPEAT
ii-iii
METALLO-ORGANIC
CONTAINING
MULTILAYERS
P3 = [N = 0]
P4 = [N = 1]

FIG.12B

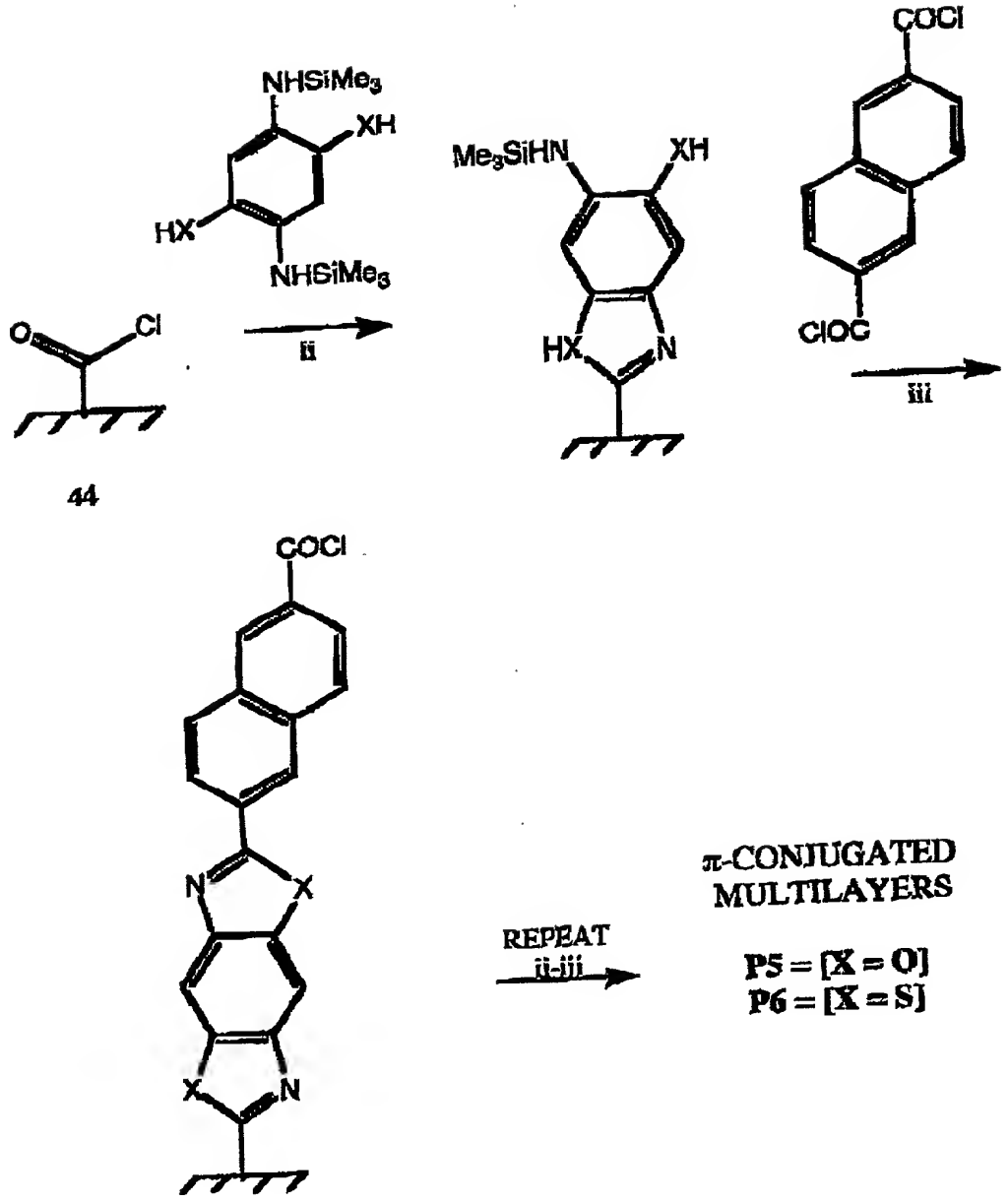

NHSiMe3
XH
HX
NHSiMe3
O
Cl
ii
Me3SiHN
XH
HX
N
COCl
ClOC
iii
44
COCl
N
X
X
N
REPEAT
ii-iii
π-CONJUGATED
MULTILAYERS
P5 = [X = O]
P6 = [X = S]

FIG.12C

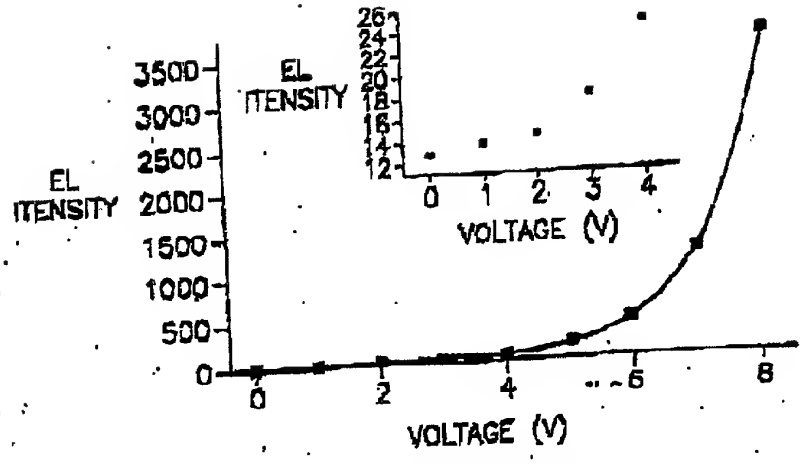


FIG.13A

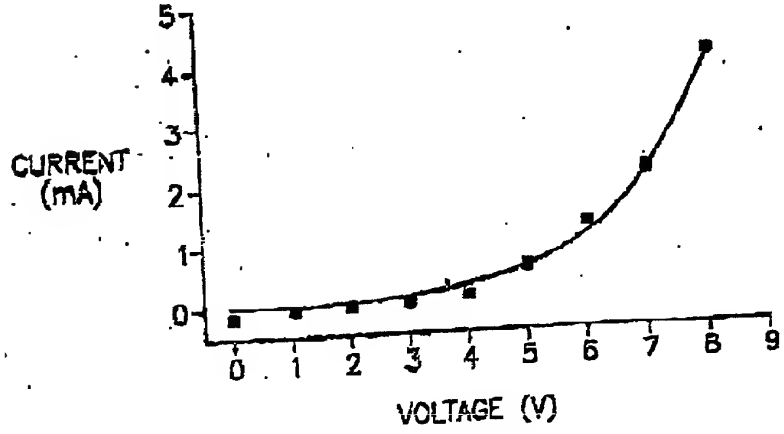


FIG.13B

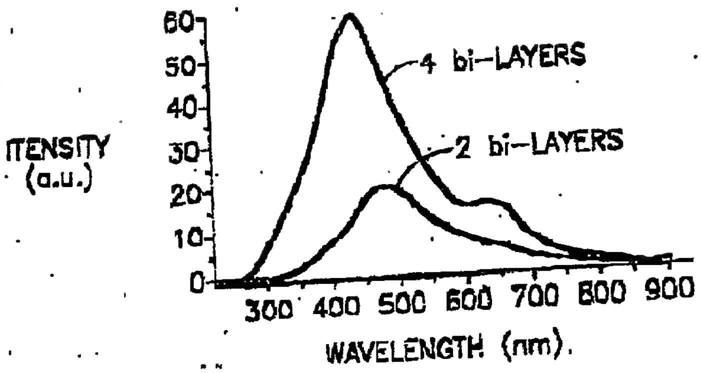


FIG.14

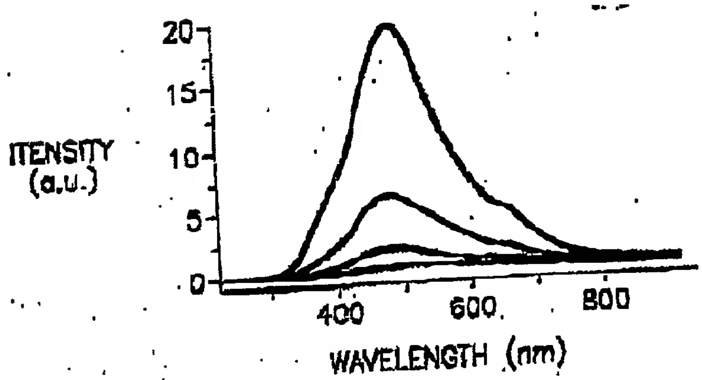


FIG.15

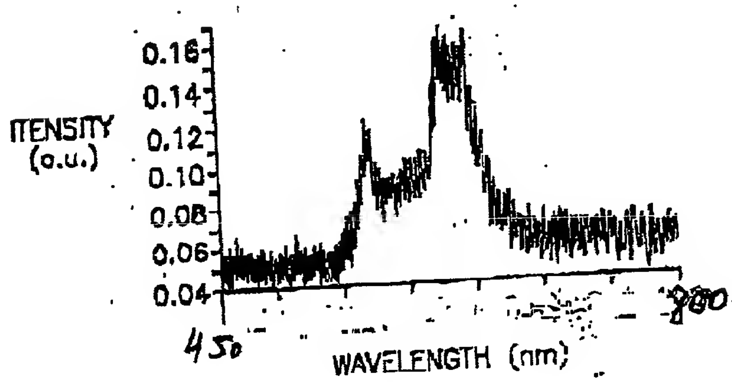


FIG.16

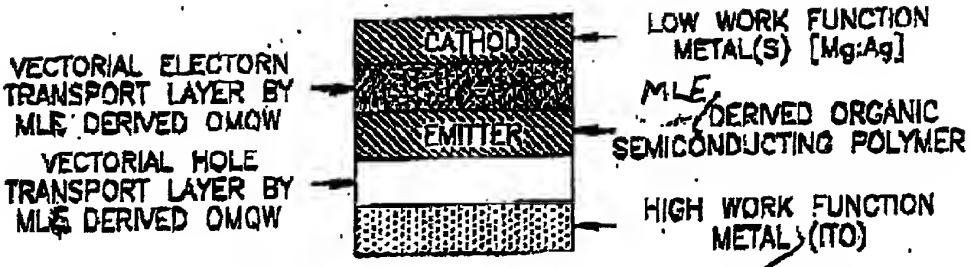


FIG.17A

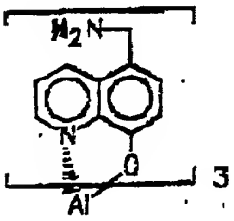


FIG.17B

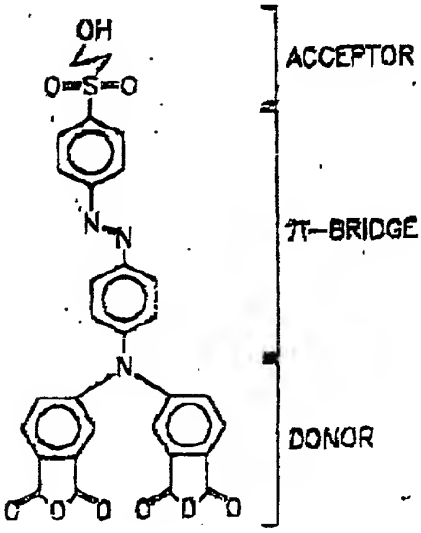
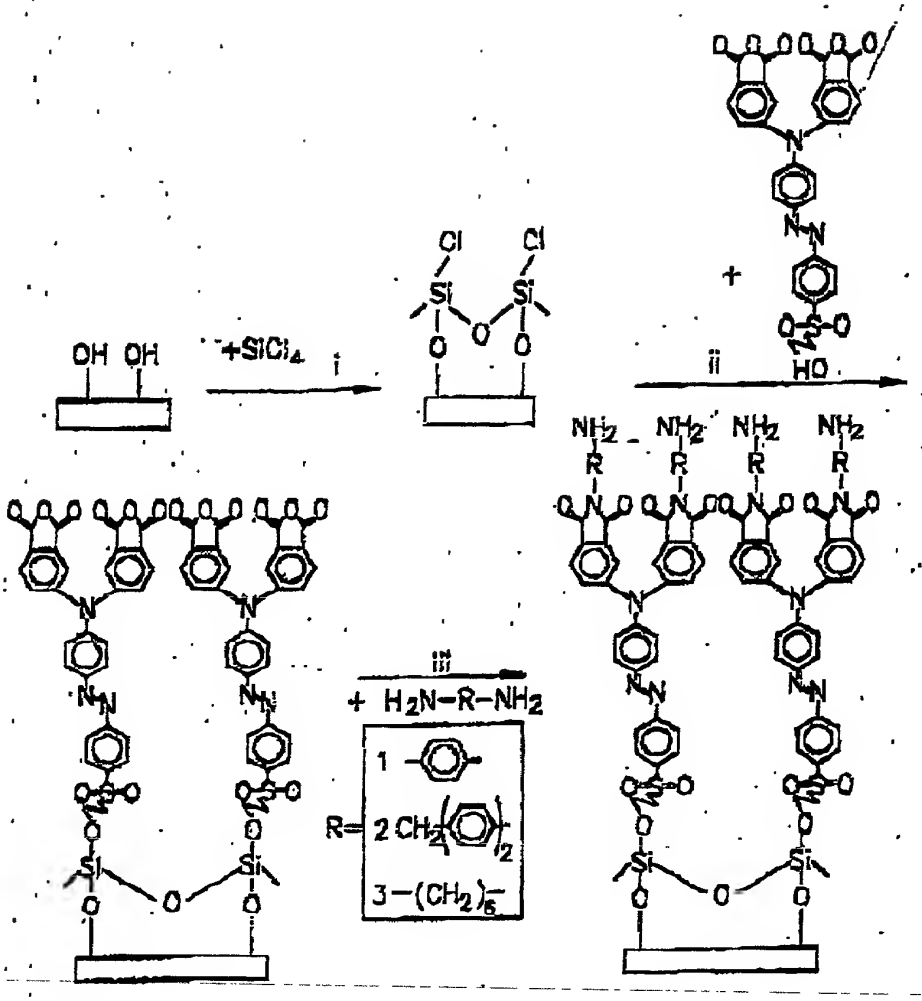


FIG.18



ORGANIC SUPERLATTICE

FIG.19